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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,438	08/19/2003	Debra Bernstein	10559-076002	4424

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EXAMINER
COLEMAN, ERIC

ART UNIT	PAPER NUMBER
2183	

DATE MAILED: 04/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

		Application No.	Applicant(s)
Office Action Summary		10/643,438	BERNSTEIN ET AL.
		Examiner	Art Unit
		Eric Coleman	2183

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *13-35* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13-16,18,23-29 and 31-34* is/are rejected.

7)☒ Claim(s) *17,19-22,30 and 35* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

2.   Claims 13-16, 18, 23-25 rejected under 35 U.S.C. 103(a) as being obvious over

Wolrich (patent No. 6,587,906).

3.   The applied reference has a common assignee and some inventors with the

instant application. Based upon the earlier effective U.S. filing date of the reference, it

constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a)

might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed

but not claimed in the reference was derived from the inventor of this application and is

thus not an invention "by another"; (2) a showing of a date of invention for the claimed

subject matter of the application which corresponds to subject matter disclosed but not

claimed in the reference, prior to the effective U.S. filing date of the reference under 37

CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application

and reference are currently owned by the same party and that the inventor named in the

application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer

in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing

that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under

35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

4.   Wolrich taught the invention as substantially as claimed including a data

processing ("DP") system comprising: At a processing engine within a processor (12)

having multiple processing engines (22a, 22b, 22c, 22d, 22e, 22f)(e.g., see fig. 1, and

col. 2, lines 10-42): executing at least one instruction of a first thread having a first

program counter the at least one instruction including one instruction to issue a request

to a resource shared by the multiple processing engines (e.g., see col. 2, lines 43-62

and col. 3, lines 9-45); swapping execution to a second thread having a second

program counter after processing engine execution of the least one instruction to issue

the request to the shared resource.

5.   Wolrich did not expressly detail (claim 13) swapping execution to the first thread

after detection of a signal generated in response to the request to the shared resource

Wolrich however taught after the memory access was finished the memory signaled

completion and the micro-engine decided which thread to turn on (e.g., see col. 3, lines

17-55). Since one purpose of the Wolrich system was to allow the system perform

useful work while one thread was waiting for memory access then one of ordinary skill

would have been motivated to turn on the thread that was accessing memory when the

memory access was complete to prevent delay in the execution of the highest priority

thread.

6.   As per claim 14, Wolrich taught selecting a thread to execute (e.g., see col. 3,

lines 17-55).

7.   As per claim 15, Wolrich taught the threads of the processing engine comprising

threads having one of the following states currently being executed the engine

available, but not currently executing, waiting for detection of a signal before being

available for execution; and wherein the selecting comprises selecting a thread among

threads available for execution, but not currently executing (e.g., see col. 3, lines 9-56).

8.   As per claim 16, Wolrich did not expressly detail electing the thread comprise

selecting a thread based on a round robin among threads available for execution.

Wolrich however taught prioritized selection of threads for execution that provided for

each micro-engine fair access to the shared resources (e.g., see col. 4, lines 53-65).

Since the round robin scheme of prioritized arbitration was well known in the art at the

time of the claimed invention for providing fair prioritized access to system resources

then one of ordinary skill in the art would have been motivated to use the round robin

scheme in at least one implementation of the Wolrich system.

9.   As per claim 18, Wolrich taught swapping execution taught selecting enabling a

context with unique program counters (e.g., see col. 3, lines 28-45). Therefore since the

enabled context had a unique program counter this would have required selecting the

program counter associated with the thread.

10.   As per claim 23, Wolrich however taught after the memory access was finished

the memory signaled completion and the microengine decided which thread to turn on

(e.g., see col. 3, lines 17-55).

11.   As per claim 24, the shared resource comprised one of the following: a memory

shared by the multiple processing engines internal to the processor and a memory

shared by the multiple processing engines external to the processor (e.g., see fig.1 and

col. 2, line 63-col. 3, line 45).

12.   As per claim 25, Wolrich taught receiving a packet, and processing the packet

using the first thread (e.g., see col. 6, lines 2-39).

Claim Rejections - 35 USC § 102

(e) the invention was described in (1) an application for patent, published under section 122(b), by
another filed in the United States before the invention by the applicant for patent or (2) a patent
granted on an application for patent by another filed in the United States before the invention by the
applicant for patent, except that an international application filed under the treaty defined in section
351(a) shall have the effects for purposes of this subsection of an application filed in the United States
only if the international application designated the United States and was published under Article 21(2)
of such treaty in the English language.

13.   Claims 26,27,29,31,32,34 are rejected under 35 U.S.C. 102(e) as being

anticipated by Wolrich (patent No. 6,587,906)

14.   The applied reference has a common assignee and some inventors with the

instant application. Based upon the earlier effective U.S. filing date of the reference, it

constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e)

might be overcome either by a showing under 37 CFR 1.132 that any invention

disclosed but not claimed in the reference was derived from the inventor of this

application and is thus not the invention "by another," or by an appropriate showing

under 37 CFR 1.131.

15.   As per claim 26,31 Wolrich taught at least one Ethernet media access controller

(31b); at least one network processor communicatively coupled to the at least one

Ethernet media access controller (13a, 13b) (e.g., see fig. 1), the at least one network

processor comprising: multiple multi-threaded processing engines (22a, 22b, 22c, 22d, 22e, 22f), individual ones of the engines including a arbiter to select a thread to execute, a memory internal to the network processor shared by the multiple processing engines(20), at least one interface to at least one memory external to the network processor(SDRAM controller 26a, SRAM controller, 26b), and at least one interface to the at least one Ethernet media access controller (e.g., fig. 1 and col. 2, line 10-col. 4, line 52).

16.   As per claim 27,32 Wolrich taught threads of the individual ones of the processing engines comprise threads having one of the following states: currently executed by the processing engine, available for execution, but not currently executed by the processing engine, waiting for detection of a signal associated with a request to a resource shared by the processing engines before being available for execution, and wherein the arbiter of an individual processing engine selects a thread from among threads available for execution, but currently executing (e.g., see col. 3, lines 9-56).

17.   As per claim 29,34 Wolrich taught swapping execution taught selecting enabling a context with unique program counters (e.g., see col. 3, lines 28-45). Therefore since the enabled context had a unique program counter this would have required selecting the program counter associated with the thread.

Claim Rejections - 35 USC § 103

18.   Claims 28,33 rejected under 35 U.S.C. 103(a) as being obvious over Wolrich

(patent No. 6,587,906).

19.   The applied reference has a common assignee and some inventors with the

instant application. Based upon the earlier effective U.S. filing date of the reference, it

constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a)

might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed

but not claimed in the reference was derived from the inventor of this application and is

thus not an invention "by another"; (2) a showing of a date of invention for the claimed

subject matter of the application which corresponds to subject matter disclosed but not

claimed in the reference, prior to the effective U.S. filing date of the reference under 37

CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application

and reference are currently owned by the same party and that the inventor named in the

application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer

in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing

that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under

35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

20.   As per claim 26,31 Wolrich taught at least one Ethernet media access controller

(31b); at least one network processor communicatively coupled to the at least one

Ethernet media access controller (13a, 13b) (e.g., see fig. 1), the at least one network

processor comprising: multiple multi-threaded processing engines (22a, 22b, 22c, 22d,

22e, 22f), individual ones of the engines including a arbiter to select a thread to execute,

a memory internal to the network processor shared by the multiple processing

engines(20), at least one interface to at least one memory external to the network

processor (SDRAM controller 26a, SRAM controller, 26b), and at least one interface to

the at least one Ethernet media access controller (e.g., fig. 1 and col. 2, line 10-col. 4,

line 52).

21.   As per claim 27, Wolrich taught threads of the individual ones of the processing

engines comprise threads having one of the following states: currently executed by the

processing engine, available for execution, but not currently executed by the processing

engine, waiting for detection of a signal associated with a request to a resource shared

by the processing engines before being available for execution, and wherein the arbiter

of an individual processing engine selects a thread from among threads available for

execution, but currently executing (e.g., see col. 3, lines 9-56).

22.   As per claim 28,33 Wolrich did not expressly detail electing the thread comprise

selecting a thread based on a round robin among threads available for execution.

Wolrich however taught prioritized selection of threads for execution that provided for

each micro-engine fair access to the shared resources (e.g., see col. 4, lines 53-65).

Since the round robin scheme of prioritized arbitration was well known in the art at the

time of the claimed invention for providing fair prioritized access to system resources

then one of ordinary skill in the art would have been motivated to use the round robin

scheme in at least one implementation of the Wolrich system.

Allowable Subject Matter

23.   Claims 17,19-22,30,35 are objected to as being dependent upon a rejected base

claim, but would be allowable if rewritten in independent form including all of the

limitations of the base claim and any intervening claims.

Conclusion

24.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

Dowling (patent No. 6,170,051) disclosed a DP system where a first program and

a second program execute concurrently such that the second program executes using

resources and cycles that would have been wasted by the first program (e.g., see

abstract).

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Eric Coleman whose telephone number is (571) 272-

4163. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Eddie Chan can be reached on (571) 272-4162. The fax phone number for

the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

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Business Center (EBC) at 866-217-9197 (toll-free).

EC

ERIC COLEMAN
PRIMARY EXAMINER